

Texas Natural Resource Conservation Commission

INTEROFFICE MEMORANDUM

To: Katherine Nelson
Section Manager
Industrial and Hazardous Waste Permits

June 26, 2002

Thru: *rec'd 6/26/02* Dr. Richard Carmichael
Team III Supervisor
Industrial and Hazardous Waste Permits

From: Conrad A. Kuharic
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Attached for your review and approval is the final, initialed draft of the Technical Peer Review Document entitled "RCRA Tank Closure Requirements". This peer review was convened to answer a general information question received by David Murry, concerning standards to which rinsate sample results should be compared. In addition, the group chose to provide scenarios for various closure situations.

After due deliberation, consensus was achieved on standards for comparison, however, there are some outstanding concerns on the specific nature of the tests applied to determine when a tank is "clean". These concerns are covered in the final section of the peer review document.

Questions or concerns may be directed to me at 239-0998.

Sincerely,

Conrad A. Kuharic

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Industrial and Hazardous Waste Permit Section

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
TECHNICAL PEER REVIEW DOCUMENT

TITLE OR ISSUE:

RCRA Tank Closure Requirements

DOCUMENT INITIATED BY

DATE: June 19, 2002

David Murry/I&HW Permits/239-6080

ISSUE DESCRIPTION:

The Environmental Protection Agency (EPA) and Texas Natural Resource Conservation Commission (TNRCC) allow the use of the risk-based values or standards to comply with the Resource Conservation and Recovery Act (RCRA) "clean closure" (closure out of RCRA) requirement to demonstrate the removal and/or decontamination of hazardous waste when considering the environmental media where a release has occurred from any RCRA hazardous waste tank, permitted or not. The applicable regulations are found in the Risk Reduction Rules (RRRs) 30 Texas Administrative Code (TAC) §335.8 and Subchapter S, for tank closures that are grandfathered or covered by permit or order. In all other cases, Texas Risk Reduction Program (TRRP) 30 TAC §350.2(h) applies.

The issue as raised concerns how to determine when the tank itself is "clean", as the tank is not an environmental medium. This is typically determined by conducting a rinsate test after a cleaning procedure. But to what standard should the rinsate results be compared?

Beyond this original issue, the peer review team discussed the appropriate application of RCRA closure requirements (in relation to the RRR or TRRP) to scenarios where RCRA hazardous waste tanks undergo various changes in status (i.e., to non-hazardous waste management, product storage, exempt status, etc.).

In the case of a permitted tank, closure must be in accordance with the approved closure plan in the permit, which can specify cleaning and testing methods. However, permit-exempt tanks may not have an approved closure plan. As they are not permitted, their closure typically is directed by the TNRCC's Remediation Division, but may also involve the TNRCC Office of Compliance and Enforcement.

WHO IS AFFECTED?

The regulated community and the TNRCC programs which review RCRA closures are affected. The TNRCC programs are currently in the Office of Permitting, Remediation & Registration, and the Office of Compliance and Enforcement.

FINDINGS OF THE PEER REVIEW TEAM:

In response to the specific question of what standard the tank rinsate results should be compared to, the peer review group determined that the use of risk-based values is protective of human health and the environment and satisfies the federal rule requirement for decontamination. This conclusion was reached based on our review of applicable Federal and Texas performance standards and regulations [40 Code of Federal Regulations (CFR) §§264/265, 30 TAC §335 and §350, and TRRP Regulatory Guidance Document 3]. Also considered were the EPA memorandum dated March 16, 1998, from Elizabeth Cotsworth, Office of Solid Waste providing guidance on risk-based clean closure; the March 19, 1987 Federal Register which discusses RCRA closure standards and defines remove and/or decontaminate using risk-based values; and the U.S. Department of Commerce National Technical Information Service (NTIS) RCRA Guidance Manual for Subpart G Closure and Post-Closure Care Standards and Subpart H Cost Estimate Requirements, (U.S.) Environmental Protection Agency, Washington, DC, January 1987.

During the course of the group discussions, additional concerns were raised on some specific aspects of tank closure requirements. Consensus was not reached on these issues, which are presented in the **ADDITIONAL CONCERNS** section of this document. Further consideration of these issues is justified.

The following are applicable to all RCRA tanks, permitted or not.

1. When closing a RCRA tank (associated ancillary equipment and secondary containment) to what standards should the verification samples be compared?

Texas is fully authorized to implement Federal regulations in lieu of the EPA. As an authorized state, Texas adopted the 1993 RRRs and the more recent TRRP rules as risk-based standards to meet the federal requirements for RCRA regulated clean closure performance standards as found in 40 CFR §§264/265.111(b) and in 30 TAC § 350.2(h) which state:

The person shall close a waste management facility component in a manner that minimizes or eliminates the need for further maintenance and controls. The manner of closure shall also minimize or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of waste, contaminants, leachate, run-off, or decomposition products to the surrounding environmental media.

40 CFR §§264/265.111(c) goes somewhat further, requiring an owner/operator to comply with additional conditions set forth in §§264/265.197. These require either a clean closure or subsequent closure as a landfill.

For clean closure of a RCRA tank, the regulations require removal/decontamination of all hazardous waste and hazardous waste residues. For RCRA purposes, removal means emptying the tank. Decontamination is typically demonstrated when the verification samples of residue from the tank are at or below levels protective of human health and the environment without use of physical controls as determined by RRRs or TRRP. This traditionally involves using the rinsate method, which is appropriate for clean, non-porous surfaces, based on historic guidance and scientific practice (see Additional Concerns).

The level at which any rinsate verification sample is indicative of a clean closure is the appropriate risk-based standard. Risk-based standards are: 1) the Maximum Contaminant Level (MCL) or appropriate groundwater Medium Specific Concentration (MSC) under the RRRs; and/or 2) the TRRP Standard A, Residential Tier

1, Ground Water Protective Concentration Limit (GW PCL), both of which are based on Drinking Water Standards. Keep in mind that all rinsate must be waste classified, regardless of the cleanup standard used for tank decontamination, and the rinsate must be handled and disposed of properly.

The rinsate collected from the cleaning of a tank containing a characteristically hazardous waste should (1) meet the appropriate value which would demonstrate decharacterization, and (2) meet either of the appropriate RRR GW MSC (the MCL), or the TRRP Standard A, Residential Tier 1 GW PCL for each hazardous constituent. Concerning the rinsate from a tank containing RCRA listed hazardous waste - if the closure conforms to 30 TAC 350.2(h)(3), "contained-in determination", and meets the appropriate risk-based value specified in (2) above, then the waste rinsate is no longer RCRA listed hazardous waste. Therefore, the listing is removed, or no longer applicable, and the mixture rule will not apply. Any tank, rinsate, or residue to be land disposed must also meet the Land Disposal Restrictions requirements, which include meeting the Universal Treatment Standard values for each hazardous constituent.

2. When a (RCRA) tank is closed to RRR or TRRP standards are there any restrictions on use of the tank after closure?

Acceptance of certification of "clean closure" of the tank terminates regulation as a hazardous waste management unit. If the closure is to RRR Standard 1, the rinsate results must be compared to an approved background or the lowest appropriate analytical Practical Quantitation Limit (PQL). If closed under a risk-based standard, although the tank is closed under or "out of RCRA", the rinsate, the tank, or any remaining residue, still may have to meet additional closure requirements under 30 TAC §335 Subchapter S (e.g., deed certification for RRR Standard 2 if the tank is left in place and not used). Note that a clean closure under TRRP (Standard A, Residential Tier 1) will have no further closure requirements. Any other closure under TRRP may have additional requirements.

Reuse of the tank to manage solid waste would subject its final closure to the requirements of 30 TAC §350.2(h) and §350 Subchapter B. However, the tank will require waste classification prior to disposal as required by 30 TAC 335 Subchapter R. Post-closure options also include reuse and recycling. These are addressed below in Change-In-Status Closures.

3. How are COCs determined?

The generator identifies chemicals of concern (COCs) based upon analytical characterization of the waste(s), or knowledge of the hazardous waste(s) managed at that tank. If the COCs are unknown, an approved modified or full list of hazardous constituents in 40 CFR Part 261 Appendix VIII (for solid wastes) and Part 264 Appendix IX (groundwater monitoring list - liquids) may be required.

4. Are the RCRA and RRR or TRRP standards in conflict and if so, which prevails?

The RRR and TRRP rules support RCRA by providing specific meaning to the closure performance standards and technical requirements. However, in any case where RCRA requirements are more stringent than those in the RRR or TRRP, the RCRA requirements must be met. EPA clearly interprets that removal and/or decontamination to attain clean closure is to the extent required to protect human health and the environment.

CHANGE-IN-STATUS CLOSURES (What are the applicable RCRA closure requirements?)

In addition to the original question, the peer review group believed it would be worthwhile to examine change-in-status closures, including applicable rules and procedures, to ensure compliance with the intent of the closure rules.

1. When a RCRA tank is removed from hazardous waste management service, clean closure involves these basic steps:
 - a. Closure notice to the TNRCC in accordance with the rules, a permit, order, or closure plan.
 - b. Follow the approved closure plan via the permit or order. For permit-exempt tank closure, the plan does not need to be approved, but must be located on-site. Use appropriate analytical methods and procedures with acceptable field and laboratory QA/QC.
 - c. Remove all hazardous waste from tank, ancillary equipment, secondary containment (e.g., liquids, bottoms, scale, to the extent practicable, but must still pass the rinsate test for decharacterization and/or to risk-based standards). All removed waste must be classified, handled and disposed of appropriately.
 - d. Remove and/or decontaminate waste residues from tank, ancillary equipment, and secondary containment. Use rinsate verification test(s) to achieve appropriate decharacterization values and/or, for non-porous surfaces, achieve risk-based value: MCL or GW PCL, or an appropriate extraction procedure and analytical test on a sample of remaining solids, or porous tank materials, such as concrete (achieve risk-based value: MCL or GW PCL).
 - e. Demonstrate that no release has occurred, or any release has been remediated such that no post-closure care is required (i.e., decharacterized and/or achieved RRR Standard 1 or 2, if grandfathered or by permit or order; or achieve TRRP Standard A Residential, Tier 1 GW PCL). This should include:
 - (1). Inspection of tank, ancillary equipment, secondary containment by an independent professional licensed engineer, typically with pictures; and
 - (2). As appropriate, soil sampling; if necessary, groundwater sampling (achieve risk-based value).
 - (3). RCRA closure report and closure certification: no post closure care, financial assurance, RCRA labeling, or inspections required if clean closed. But final closure may include requirements under the 30 TAC §335 Subchapter S, relating to RRR

Standard 1 (requires comparison to the higher of background or the PQL) and/or Standard 2 closures (which may require deed certification based on tank status and disposition). As previously noted, a clean closure under TRRP will have no further closure requirements.

- f. Update the Notice of Registration for the unit, and apply for an appropriate permit modification, if applicable.

- 2. When a RCRA tank is removed from hazardous waste management service and subsequently used to manage a chemically or physically different non-hazardous waste:

Same as item 1. above, except - final closure under 30 §TAC 335 Subchapter S or 30 TAC §350 Subchapter B may include the partial closure option, based on continuing tank operations.

- 3. When a RCRA tank is removed from hazardous waste management service and subsequently used to manage a non-hazardous waste, and the chemical contents of the tank will not change (e.g., the hazardous waste in the tank has been delisted by EPA):

Same as item 1. above, except that the facility is no longer required to follow those parts of the closure plan concerning the removal of the hazardous waste and the removal and/or decontamination of the hazardous waste residue. The facility must still demonstrate that no release has occurred (as a release that did occur would have been hazardous). A RCRA closure report and closure certification must still be submitted. The tank will still be subject to any applicable sections of 30 TAC §335 and §350 upon final solid waste management closure, if left in place, and tank disposition criteria if disposed of.

- 4. When a RCRA tank is removed from hazardous waste management service and subsequently used to manage an exempt material. The chemical contents of the tank will not change, but the previously identified hazardous waste has met the criteria for exemption from the definition of a solid waste (e.g., comparable fuel):

While this situation is similar to item 3. above, the tank must achieve all applicable closure requirements of item 1., as this change in status is the final closure of the RCRA tank.

- 5. When a RCRA tank is removed from hazardous waste management service and subsequently used to store a different material as a product:

All of item 1. above applies. Final RCRA Closure, including applicable sections of 30 TAC 335 and 350, must occur prior to operation as a product tank.

- 6. When a RCRA tank is changing management from one hazardous waste to a different hazardous waste:

- a. Update the Notice of Registration;
- b. If permitted, modify the permit as applicable.

- c. Empty the tank to such a degree that waste compatibility is not a problem;
- d. Final closure requirements must be met on the conclusion of hazardous waste management.

Hazardous waste A must be compatible with hazardous waste B or hazardous waste A must be completely removed prior to the introduction of hazardous waste B. If hazardous waste A is listed, hazardous waste B retains the listing by virtue of the mixture rule, unless hazardous waste A is removed (refer to 1d., above).

ADDITIONAL CONCERNS

As previously noted, the group is in agreement that rinsate samples are adequate indicators for non-porous tank surfaces. However, when considering a surface that is porous to some degree, there was no consensus as to the proper approach to demonstrate decontamination. Further consideration and recommendations for guidance may be warranted.

- * While a rinsate test is commonly used, is it always an adequate test to demonstrate waste removal and/or decontamination?

Depending on the nature of the rinsate liquid used and condition of the tank itself, a rinsate may not be able to adequately extract COCs sequestered in stubborn scale or crusty residues during the course of a casual contact. Any COCs not extracted are not represented in the rinsate, and the results may be, essentially, a false negative. Removal of a material sample to be subjected to TCLP or an appropriate extraction and analytical procedure (SW-846 methods) will provide results that demonstrate whether or not the rinsate test is sufficient for these materials, especially when COCs are detected in the rinsate, but at levels below applicable risk-based values (i.e., if casual contact is leaching some COCs, it remains to be shown whether or not enough remains to be considered hazardous).

Another situation exists when the tank is made of a porous material such as concrete. A short contact with a rinsate may not adequately represent the amount of a COC contained within the tank material itself. This is reflected in 40 CFR §268.45 (Alternative Treatment Standards), which require the removal of at least 0.6 cm of the surface layer to get to a clean surface.

- * What constitutes a "clean surface"?

It is assumed that when the tank is empty, the waste has been removed, and a rinsate test would confirm waste removal. This would mean that any remaining material, for example, sludges or scale, are waste residues. Tank closures sometimes result in unremovable wastes on tank surfaces. The EPA is quite specific as to what constitutes a "clean debris surface" for land disposal purposes, as noted in 40 CFR §268.45;

"A "clean debris surface" means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks crevices, and pits shall be limited to no more than 5% of each square inch of surface."

There is no similar performance standard for tank closures, and the concern here is with the tank, not debris; in fact, 57 FR 37277 specifically notes that an intact tank is not debris. However, we recommend that this definition, which is not realistic for something like a large tank, be used as a starting point for the development of guidance for our purposes in determining that hazardous waste removal is complete. If these residues are not removable, the person could either remove and properly dispose of the tank, or close the tank with waste in place, i.e., as a landfill.

Review Performed By

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